

CA 2E Tips & Techniques

11B

Rory Hewitt

Simon Cockayne

CA

Co-branded Logo Footprint
Aligned LEFT ON COVER ONLY
Must Fit Within This Space

ADC AUSTIN

MKS

WEBSYDIAN™

cm FIRST

desynit
ca

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Rory & Simon - the dynamic duo

- > The Magic Circle won't share its secrets...but we will. Rory and Simon, among the most entertaining engineers at CA, divulge time-saving, frustration-busting, oh-wowing, "i-never-knew-it-could-do-THAT" tips and techniques...to help you get the very best out of the 2E family of products. You'll be glad you came!
- > "Real software engineers play tennis." (Simon)
- > "Real software engineers eat quiche." (Rory)
- > Ethernet (n): something used to catch the Etherbunny

The development lifecycle

1. Programmer produces 'bug-free' code
2. Product is tested. 20 bugs are found.
3. Programmer fixes 10 of the bugs and explains to QA that the other 10 aren't really bugs.
4. QA finds that five of the fixes didn't work and discovers 15 new bugs.
5. See step 3.
6. The product is released.
7. Users find 137 new bugs.
8. New programmer fixes almost all of the 137 bugs, but introduce 456 new ones.
9. Original programmer sends QA team a postcard from Fiji. QA team quits.
10. Company is bought by competitor using profits from their latest release, which had 783 bugs.
11. New CEO hires programmer to redo program from scratch.
12. See step 1.

Using dynamic command keys

- > Simple technique to display different command keys
- > Different keys for different authority users
- > Different text for different languages
- > Allow for "F24=More keys" functionality

EDIT FUNCTIONS

NEWROO100H

File name. . . : *Standard header/footer ** 1ST LEVEL **

| ? Function | Function type | Access path |
|---------------------------|----------------------|---------------|
| *STANDARD REPORT HEADINGS | Define report format | Physical file |
| *STANDARD SCREEN HEADINGS | Define screen format | Physical file |
| *STD CUA ACTION BAR | Define screen format | Physical file |
| *STD CUA WINDOW | Define screen format | Physical file |
| *STD SCREEN HEADINGS OPT1 | Define screen format | Physical file |
| *STD SCREEN HEADINGS(CUA) | Define screen format | Physical file |
| *STD SCREEN HEADINGS(MLS) | Define screen format | Physical file |
| *STD 27x132 HEADINGS(MLS) | Define screen format | Physical file |
| Set Bottom Instruction | Execute user source | *NONE |
| 16915149 | Define screen format | Physical file |

More...

SEL: Z=Details P=Parms F=Action diagram S=Device D=Delete O=Open
 T=Structure A=Access path G/J=Generate function H=Generate HTML ...
 F3=Exit F5=Reload F7=File details F9=Add functions F23=More options
 F11=Next View F17=Services F21=Copy *Template function

EDIT SCREEN FORMAT DETAILS

NEWROU100H

Format : Screen footer Type: FTR

Blank lines before fmt : or Fixed start line no : 23

| ? | Field | Func | Typ | Usg | Ovr | Length | GEN name | Etp | Rqd | LL |
|---|-------------------------|------|-----|-----|-----|--------|------------|-----|-----|----|
| — | *Function main file mbr | FTR | VNM | 0 | | 10 | *FILMBR | A | | |
| — | *COMMAND KEY TEXT 1 | FTR | NAR | 0 | | 78 | *CMDTX1 | A | | |
| — | *COMMAND KEY TEXT 2 | FTR | NAR | 0 | | 78 | *CMDTX2 | A | | |
| — | *SFLSEL TEXT 1 | FTR | NAR | 0 | | 78 | *SELTX1 | A | | |
| — | *SFLSEL TEXT 2 | FTR | NAR | 0 | | 78 | *SELTX2 | A | | |
| — | *SFLSEL PROMPT TEXT | FTR | NAR | 0 | | 78 | *SELPMT | A | | |
| — | *ACTION BAR CHOICE AREA | FTR | NAR | 0 | | 78 | *ABOCHCARA | A | | |
| — | *ACTION BAR DIVIDER | FTR | NAR | 0 | | 78 | *ABODVD | A | | |
| — | *WINDOW TITLE | FTR | NAR | 0 | | 25 | *WDWTTL | A | | |
| — | *TOP INSTRUCTION1 | FTR | NAR | 0 | | 78 | *TOPIN1 | A | | + |

SEL: Z-Details, A,B,C,D-Text position, I,O,H,'-'-Field usage.
 F3=Exit F7=Fmt rel F10=Sequence F19=Add function field F24=More keys

...and add *BOTTOM INSTRUCTION field instead...

A1

9/25/09

9:51:08

EDIT SCREEN FORMAT DETAILS

NEW INSTRUCTION

Format : Screen footer Type: FTR

Blank lines before fmt : or Fixed start line no : 23

| ? | Field | Func | Typ | Usg | Ovr | Length | GEN name | Etp | Rqd | LL |
|---|---------------------|------|-----|-----|-----|--------|------------|-----|-----|----|
| _ | *TOP INSTRUCTION2 | FTR | NAR | 0 | | 78 | *TOPIN2 | A | | |
| _ | *BOTTOM INSTRUCTION | FTR | NAR | 0 | 0 | 78 | *BTMIN | A | | |
| _ | *SCREEN ID | FTR | VNM | 0 | | 10 | *SCREEN ID | A | | |

SEL: Z-Details, A,B,C,D-Text position, I,O,H,'-'-Field usage.

F3=Exit F7=Fmt rel F10=Sequence F19=Add function field F24=More keys

*PROGRAM

*PGMMOD

DD/MM/YY HH:MM:SS

*STD SCREEN HEADINGS OPT1

...so it looks like this...

*BTMIN

EDIT FUNCTIONS

NEWRC1001

File name. . . : *Standard header/footer ** 1ST LEVEL **

| ? Function | Function type | Access path |
|---------------------------|----------------------|---------------|
| *STANDARD REPORT HEADINGS | Define report format | Physical file |
| *STANDARD SCREEN HEADINGS | Define screen format | Physical file |
| *STD CUA ACTION BAR | Define screen format | Physical file |
| *STD CUA WINDOW | Define screen format | Physical file |
| *STD SCREEN HEADINGS OPT1 | Define screen format | Physical file |
| *STD SCREEN HEADINGS(CUA) | Define screen format | Physical file |
| *STD SCREEN HEADINGS(MLS) | Define screen format | Physical file |
| *STD 27x132 HEADINGS(MLS) | Define screen format | Physical file |
| Set Bottom Instruction | Execute user source | *NONE |
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More...

SEL: Z=Details P=Parms F=Action diagram S=Device D=Delete O=Open
T=Structure A=Access path G/J=Generate function H=Generate HTML ...
F3=Exit F5=Reload F7=File details F9=Add functions F23=More options
F11=Next View F17=Services F21=Copy *Template function

SEU==>

UUFUFR

***** Beginning of data *****

0001.00

0001.01 * Set Bottom Instruction

0001.02

0002.00 * ZZBMI is the *BOTTOM INSTRUCTION screen field

0003.00

0004.00 C MOVEL #IBMI ZZBMI

0005.00

***** End of data *****

...and add *BOTTOM INSTRUCTION as an input parameter

EDIT FUNCTION PARAMETERS NEWROO100H

Function name. . : Set Bottom Instruction Type : Execute user source
Received by file : *Standard header/footer Acpth: *NONE

| ? | File/*FIELD | Access path/Field/Array | Passed | Seq | Pgm Ctx | Par Ctx |
|---|-------------|-------------------------|--------|-----|---------|---------|
| █ | *FIELD | *BOTTOM INSTRUCTION | FLD | | | |
| - | | | | | | |
| - | | | | | | |
| - | | | | | | |
| - | | | | | | |
| - | | | | | | |
| - | | | | | | |
| - | | | | | | |
| - | | | | | | |
| - | | | | | | |
| - | | | | | | |

Values

- FLD: One parameter per field
- RCD: One parameter for all fields
- KEY: One parameter for key fields only

**All fields **

Create new fields to hold command key text

A1

9/25/09

9:56:57

DISPLAY FIELDS

NEWRO1001

Field reference file . : *NONE

(*ZERO) (*BLANK)

| Field name | Type | REF | Length | Field name | Field usage |
|---------------------------|------|-----|--------|------------|-------------|
| Cmd | | | | | |
| CmdKey text - Add mode | TXT | | 78 | AVTX | USR |
| CmdKey text - Change mode | TXT | REF | 78 | AWTX | USR |
| customer age | NBR | | 5.0 | ACNB | ATR |
| customer code | CDE | | 6 | AHCD | CDE |
| customer name | TXT | | 25 | AGTX | ATR |
| C22E_245 (2) atr TXT | TXT | | 25 | ALTX | ATR |
| C22E_245 (2) DRV field | NBR | | 5.0 | AHNB | DRV |
| C22E_245 (2) key CDE | CDE | | 6 | ATCD | CDE |
| C22E_245 (3) key CDE | CDE | | 6 | AUCD | CDE |
| C22E_245 atr 1 STS | STS | | 1 | AIST | ATR |
| C22E_245 atr 1 WRK | STS | REF | 1 | AJST | USR |
| C22E_245 atr 2 TXT | TXT | | 25 | AJTX | ATR |
| C22E_245 atr 2 WRK | TXT | REF | 25 | AKTX | USR |

+

SEL: P-Parameters, F-Function, N-Narrative.

Z-Details, R-REF field, U-Usage, L-Locks.

F3=Exit F5=Reload F10=Define field F11=Unreferenced fields

EDIT FUNCTION OPTIONS

NEWRO1001

Function name . . . : Edit Conf 1 Type. : Edit file
 Received by file . . : Conf 1 Acpth : Retrieval index
 Header/footer . . . : *STD SCREEN HEADINGS OPT1 <-Explicitly selected

| OPTION | SEL | VALID VALUES |
|------------------------------|----------|--|
| Create record | <u>Y</u> | (<u>Y</u> -Yes, N-No) |
| Change record | <u>Y</u> | (<u>Y</u> -Yes, N-No) |
| Delete record | <u>Y</u> | (<u>Y</u> -Yes, N-No) |
| Dynamic program mode | <u>N</u> | (<u>Y</u> -Yes, <u>N</u> -No) |
| Subfile selection | <u>Y</u> | (<u>Y</u> -Yes, N-No) |
| Confirm prompt | <u>Y</u> | (<u>Y</u> -Yes, N-No) |
| Initial value for confirm : | <u>M</u> | (<u>M</u> -MDLVAL, Y-Yes, <u>N</u> -No) |
| Commit control | <u>N</u> | (<u>M</u> -Master, <u>S</u> -Slave, <u>N</u> -None) |
| If action bar, what type? : | <u>M</u> | (<u>M</u> -MDLVAL, <u>A</u> -Action_bar, <u>D</u> -DDS_menubar) |
| Generation mode | <u>A</u> | (<u>M</u> -MDLVAL, <u>D</u> -DDS, <u>S</u> -SQL, <u>A</u> -ACPVAL) |

More...

EDIT ACTION DIAGRAM

...passing appropriate command key text f 1

FIND=>

Edit Conf 1

> USER: Initialize subfile header

.--



EDIT ACTION - FUNCTION DETAILS

Function file : *Standard header/footer

Function. . . : Set Bottom Instruction

| IOB Parameter | Obj | Use Typ | Ctx Object Name |
|-----------------------|-----|---------|--|
| I *BOTTOM INSTRUCTION | | FLD | <u>CL</u> <u>CmdKey text - Change mode</u> |

F3=Exit

F5=Reload

F9=Edit parms

F10=Default parms

F12=Previous

F15=Undefined parms only

EDIT CONT 1

key .

Type options, press Enter.
4=Delete

| Opt | key | atr |
|-----|--------|---------------|
| _ | ABCDEF | <u>123456</u> |
| _ | GHIJKL | <u>789012</u> |

F3=Exit F9=Change

Wrapping Action Diagram code

- > Re-use existing code fragments
- > Minimize testing
- > Enable external access to common validation routines
 - Available to non-2E programs
- > Reducing duplication, work, errors
- > Preparation for Web Services, SOA etc.

FIND=>

```

> Edit
-- : USER EXIT POINTS Opt: X,Z=Select V=Summary W=Wrapper
...I : _ USER: Initialize program <<< <--
.=RE : _ USER: Initialize subfile header <<<
-*A : _ USER: Initialize subfile record (existing record)
.. : _ USER: Initialize subfile record (new record) <--
PG : _ CALC: Subfile control function fields
> : _ W USER: Validate subfile control <<<
.= : _ USER: Validate subfile record fields
- : _ CALC: Subfile record function fields
- : _ USER: Validate subfile record relations +
' -ENDWHILE
' -ENDWHILE
...Closedown
--

```

<--

<--

<--

<--

...and create as new external function with meaningful name...

FIND=>

> Edit

```

.....
-- : USER EXIT POINTS Opt: X,Z=Select V=Summary W=Wrapper :
...I : _ USER: Initialize program <<< <--
.=RE : _ USER: Initialize subfile header <<<
-*A : _ USER: Initialize subfile record (existing record) :

```

CREATE WRAPPED FUNCTION

Function file : Conf 1 <<

Function. . . : Complex validation

Function type : E E=EXCEXTFUN, I=EXCINTFUN

F3=Exit F12=Cancel

...Closedown

<--

EDIT FUNCTIONS

HEWR00190M

File name. . . : Conf 1

** 1ST LEVEL **

| ? Function | Function type | Access path |
|--------------------|---------------------------|-----------------|
| Change Conf 1 | Change object | Update index |
| Complex validation | Execute external function | *NONE |
| Conf 1 srvpgm | Service program | *NONE |
| Create Conf 1 | Create object | Update index |
| Delete Conf 1 | Delete object | Update index |
| Edit Conf 1 | Edit file | Retrieval index |
| eef | Execute external function | *NONE |
| Select Conf 1 | Select record | Retrieval index |

More...

SEL: Z=Details P=Parms F=Action diagram S=Device D=Delete O=Open
 T=Structure A=Access path G/J=Generate function H=Generate HTML ...
 F3=Exit F5=Reload F7=File details F9=Add functions F23=More options
 F11=Next View F17=Services F21=Copy *Template function

EDIT ACTION DIAGRAM

...and replace original in-line code in every function with call to new function...

f 1

Exit Conf 1

FIND=>

> USER: Validate subfile control

.--

. Complex validation

. **Complex validation - Conf 1 ***

'--

<<<
<<<
<<<

Gen objs : 1
Total : 1

...which can be checked for usages/references...

Model . : HEWR00190M
Level . : 001

Object: Complex validation Owner . : Conf 1
Type : FUN Attr: RP4 Include inactive code: *YES Exclude sys objs: *YES
Scope : *NEXT Filter: *ANY Reason: *FIRST Current objs only: *YES
Object: _____ Type: _____

2=Edit 3=Copy 4>Delete object 5=Display 8=Details 10=Action diagram
13=Parms 14=GEN batch 15=GEN interactive 16=Y2CALL

| Opt | Object | Typ | Atr | Owner | Lvl | Reason | Wrn |
|-----|--------------------|-----|-----|--------|-----|---------|-----|
| __ | Complex validation | FUN | RP4 | Conf 1 | 000 | *OBJECT | |

Bottom

F3=Exit F5=Refresh F9=Command line F12=Previous F15=Top level
F16=Build model list F21=Print list F22=File locks F23=More options

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Simple CA 2E tips

- > Option Y against a function to invoke Y2CALL
- > F11 from EDIT FUNCTIONS to display
 - Source member names
 - Function types & attributes
 - Internal surrogate numbers
- > Function type abbreviations
 - EEF instead of EXCEXTFUN or "Execute External Function"
 - SP
 - WS
 - ...

Simple CA 2E tips

- > Start using ILE (RPGIV or COBOL ILE generator)
 - No-fuss conversion
 - RPG/400 language has been 'stabilized' for several years
 - New features may only be available for ILE
 - New string-handling BIF's
 - Ability to modularize code better
 - Already Web Services is only available for ILE

- > Upgrade to Release 8.5 (or at least to r8.1.2)
 - r8.1.2 has been out for over a year - practically bug-free!

Simple CA 2E tips

- > Look into using CA 2E Web Option for web-enablement
 - Same development team as CA 2E - tight integration
 - Same look-and-feel
 - No need to learn Java, .NET, ASP, JSP...
 - Runtime is free!
 - Demo generator licenses may be available
 - Contact Bill Hunt for details (william.hunt@ca.com)

YCVTSPLF

- > Perfect for your applications
 - Full-featured reports
 - Ad-hoc queries
 - Print to web
- > Also good for sending job logs to CA Support
- > Link with Web Option to create/display PDF's on page
- > De-licensed command (Free! Free! Free!)

YWRKF

- > F8 to display SQL-equivalent statement
- > F16 to display RRN
- > Record selection
 - EQ (Equals to length of text)
 - EX (Equals to length of field)
- > F16 from record selection screen
 - Toggle inclusive/exclusive record selection by field

YPDDAMI

Work with File - Multi record display

File : HEWR00190G/UUA1REP Confirm:
 Member . . : UUA1REP 2 Window shift: 75
 Window . . : 1 Record no. : Access : *ARRIVAL *SELECT
 8=Details 5=Update C=Copy D>Delete R=Reinstate
 key atr
 _ GHIJKL 789012

F3=Exit F6=Print F7=Select F9=Add record F10=Start of file F24=More

SELECT * FROM HEWR00190G/UUA1REP WHERE A1AICD LIKE 'G%'

YPDDAMI

Work with File - Multi record display

File : HEWR00190G/UUA1REP Confirm:
Member . . . : UUA1REP 2 Window shift: 75
Window . . . : 1 Record no. : Access : *ARRIVAL
8=Details 5=Update C=Copy D>Delete R=Reinstate
*RRN key atr
_ 000000001 ABCDEF 123456
_ 000000002 GHIJKL 789012

F3=Exit F6=Print F7=Select F9=Add record F10=Start of file F24=More

Function key not allowed.

Work with File - Select details

File : HEWR00190G/UUA1REP

Member . . : UUA1REP

EXCLUSIVE SELECTION

Scan limit (records): 99 (Blank = no limit)

EQ/X NE G/LT G/LE E/NF CT NC

Heading

Length

Value

Conf 1

FORMAT: FA1RECE

key

6

EX

G

atr

6

—

—

Ignore case : N (Y,N)

F3=Exit F5=Format F11=Reset F14=Field names F16=Selection type

Use the CA Forums

- > <http://caforums.ca.com/ca/>
- > Multiple CA 2E (and CA Plex!)-related forums
- > Learn from (and help) other CA 2E users

> <https://support.ca.com>



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